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(54) IMPROVEMENTS IN AND RELATING TO INTERLININGS FOR SHIRT COLLARS

(71) We, D-H-J CUT LININGS LIMITED, a British Company formerly of 39 King William Street, London, E.C.4. and now of 2, Wardrobe Place, London EC4V 5AH, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to interlinings for shirt collars. More especially, the invention relates to reinforced interlinings for use in the manufacture of shirt collars and to a method of making them.

The present invention provides a reinforced interlining for a shirt collar, which comprises an interlining having one of its surfaces coated or impregnated with a thermosoftening resin and having bonded to its other surface one or more reinforcing pieces so shaped as to occupy the cape portion and at least a part of the neck band of a collar and, if desired, the surface of the or each reinforcing piece remote from the interlining is also coated or impregnated with a thermosoftening resin.

The present invention also provides a method of making such a reinforced interlining for a shirt collar, wherein one or more reinforcing pieces so shaped as to occupy the cape portion and at least a part of the neck band of a collar are bonded to one surface of an interlining, the other surface of which is provided with a coating or impregnation of a thermosoftening resin and, if desired, the surface of the or each reinforcing piece remote from the interlining is also provided with a coating or impregnation of a thermosoftening resin.

The reinforced interlining according to the present invention therefore comprises a basic interlining securely bonded to one or more appropriately shaped reinforcing pieces. The interlining and reinforcing piece or pieces cannot therefore become separate from each other in the finished collar and thereby spoil the smooth appearance of the collar even after prolonged wear and repeated laundering.

The material which is used as the interlining and reinforcing pieces according to the present invention is suitably a material which is conventionally used in the manufacture of shirt collar. Especially suitable in this respect are cellulosic materials, preferably 100% cotton woven fabrics. The thickness of the material used for a particular interlining and reinforcing piece will, of course, depend upon the degree of stiffness required in the finished collar. Where an especially soft and pliable collar is required, the interlining and reinforcing will both comprise soft materials, whereas, when a stiff collar is required, both stiff interlining and stiff reinforcing may be used. Collars of intermediate quality may be made from a soft interlining and a stiff reinforcing or vice versa.

With regard to the thermosoftening resin with which the interlining and reinforcing are coated or impregnated any thermosoftening material may be used which will soften at a temperature which is sufficiently low to avoid damage to the reinforced interlining and outer fabric of the collar and which is compatible with and will firmly bond together the reinforced interlining and outer fabric of the collar.

The thermosoftening material may completely cover the interlining and reinforcing in a sufficiently thin layer both to avoid seepage through the outer fabric of the collar upon softening and substantially to avoid alteration of the intrinsic stiffness of the interlining and reinforcing. An especially advantageous method of coating the reinforcing and interlining is to apply the thermosoftening resin as a "microdot", that is to say, as a plurality of small closely spaced dots by, for example, extruding the

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resin through a perforated drum over which is passed the fabric to be coated.

The reinforcing and interlining fabrics most advantageously comprise a 100% cott n fabric coated with a microdot pattern f a thermosoftening resin.

The method according to the present invention may advantageously be carried out as follows.

The basic interlining is first cut to the shape required from a sheet of a material coated on one side only with a thermosoftening resin. The reinforcing pieces are also cut to the required shape from a material coated on one or both sides with a thermosoftening resin and positioned on the uncoated surface of the interlining. The reinforcing pieces may then advantageously be secured to the interlining by "spot-welding", that is to say, by bringing a plurality of small heated members into contact with the reinforcing pieces for a period of time that is sufficient to cause the thermosoftening resin to soften in order to form an adhesive bond between the reinforcing pieces and the interlining. In this respect, the heated members will, in general, have a temperature in the range of from 170° to 180°C and will remain in contact with the reinforcing pieces for up to 2 seconds, preferably for about 1 second. The temperature and/or time may of course vary according to the material used.

The interlining with the reinforcing pieces attached, may then be uniformally heated, preferably under an applied pressure in order to soften the thermosoftening resin and securely bond the interlining to the reinforcing pieces. The interlining and reinforcing pieces will, in general, be heated to a temperature in the range of from 170° to 180°C under a pressure of 3 to 4 kg/cm^2 for a period of from 7 to 15 seconds. The precise temperature, pressure and time involved, will, however, depend upon both the apparatus used and the thickness and type of the interlining and reinforcing. Alternatively, the interlining and reinforcing pieces may be heated to the desired temperature whilst air is simultaneously drawn through the fabric. This may most advantageously be effected by supporting the interlining and reinforcing pieces on for example, a fine wire mesh whilst drawing air through the fabric. The resulting laminate is then advantageously cooled, preferably rapidly cooled. This rapid cooling considerably increases the adhesive strength of the thermosoftening resin and prevents distortions in the laminate.

It will be appreciated that, during the spot-welding and heating steps of the method according to the present invention, the thermosoftening coating on the surface of the interlining remote from the reinforcing pieces and, if present, the thermosoftening coating on the surface of the reinforcing pieces remote from the interlining, will soften as well as the thermosoftening coating on the surface of the reinforcing pieces adjacent the interlining. It is therefore advantageous to arrange a material to which the thermosoftening resin will not adhere between the interlining and reinforcing pieces and the work surface and heating elements, respectively. Suitable materials in this respect are, for example, silicone paper and, especially polytetrafluoroethylene cloth, for example, Teflon (registered Trade Mark) cloth. This material also serves to protect the softened resin against dirt and dust particles which might otherwise adhere thereto.

The reinforced interlining according to the present invention will, in general, have the shape of the finished collar. The interlining may however, advantageously be slightly larger than the reinforcing piece for the cape portion of the collar so that the reinforcing piece for the cape portion of the collar is surrounded by at least a narrow margin of the interlining, for example, a margin approximately 1 cm wide. This margin of interlining may be used to stitch the outer fabric of the collar to the reinforced interlining as is well known in the art.

According to the present invention, however, the outer fabric of the collar is adhesively secured to the reinforced interlining by means of the thermosoftening resin. A double thickness of the outer fabric of the collar is therefore secured to the coated surface of the reinforced interlining by stitching along the periphery of the interlining with the exception of that edge of the neck band which is subsequently to be secured to the shirt. The combination is then heated under pressure to soften the thermosoftening resin and secure the whole of the surface of the interlining to the adjacent outer fabric. This forms the outer surface of the finished collar.

The collar is then turned, i.e. turned inside-out along the previously made line of stitching, and, if the reinforcing pieces are coated with thermosoftening resin on their surfaces remote from the interlining, again heated under pressure to soften the thermosoftening resin and secure the outer fabric to the reinforcing pieces. This forms the under-surface of the finished collar.

If desired, the fabric may be further secured to the interlining by stitching around the periphery of the collar. This further stitching is, however, preferably carried out before the second heating step (when such a step is carried out) so that the stitches are pressed to help obscure them. When this stitching is carried out before the

final heating step, it is also possible to insert small strips of reinforcing materials i. . " bones ", along each side edge of the cape portion of the collar. These are held in place by the stitching, and preferably comprise, for example, strips of Mylar (registered Trade Mark) or Melinex (registered Trade Mark).

As stated above, the reinforced interlining will, in general, have the shape of the finished collar, i.e. there will be no margin of basic interlining around the reinforcing piece for the cape portion of the collar. The outer fabric of the collar may therefore be directly secured to the reinforced interlining by means of the thermosoftening resin, and this forms the outer surface of the finished collar. This outer fabric will have a size sufficient to provide a narrow, for example, 1 cm margin of fabric around the cape portion of the collar, and the fabric which forms the under surface of the finished collar is stitched to this narrow margin, either before or after securing the fabric to the interlining. As described above, the collar is then turned and, if necessary, again heated under pressure to secure the fabric to the reinforcing pieces.

When it is desired to provide the second form of collar described above with "bones", it has been found especially advantageous to secure, for example, by stitching, a small strip of, for example, Mylar or Melinex to a small piece of reinforcement material and to adhesively secure this combination to each side edge of the reinforcing piece for the cape portion of the collar. The combination may be secured to the reinforcing piece either before or after the latter is secured to the basic interlining, but is advantageously secured to the reinforcing piece by spot welding at the same time as the latter is spot welded to the basic interlining.

This latter form of additional stiffening is most advantageous when forming a bluff edge collar, i.e. a collar in which there is no stitching through the outer fabric of the collar by means of which the " bones " may be held in place, since there is no stitching through the reinforced interlining which might otherwise show through the outer fabric of the collar and spoil the smooth appearance of the collar.

Collars manufactured using the reinforced interlinings according to the present invention, therefore, have the outer fabric firmly secured to the interlining by the thermosoftening resin. The collars, therefore, have a smoother, crisper appearance since such effects as puckering, gathering and differences in tension of the outer fabric are substantially eliminated and complete homogeneity of shrinkage between the outer fabric and the interlining is obtained.

As stated above the thickness of the interlining and/or reinforcing pieces used will depend upon the degree of stiffness required in the finished collar. It will be appreciated that instead of using a single reinforcing piece to form the cape portion of the collar more than one such reinforcing piece can be used to build up a reinforcement of the desired thickness and stiffness. When the reinforcing piece is not required to be bonded to the outer fabric of the collar, the desired thickness can be obtained from a plurality of appropriately shaped reinforcing pieces coated on one surface only. When the reinforcing piece is to be bonded to the outer fabric, it is desirable to use a fabric coated on one side for all but the last of the reinforcing pieces applied to the interlining, and to use a fabric coated on both sides for the final reinforcing piece. In this way, the presence of excess thermosoftening resin between adjacent layers of reinforcement which could be caused by bonding together two coated surfaces is avoided and the last reinforcing piece applied will present a coated surface for bonding to the outer fabric. Alternatively, the first reinforcing piece applied to the interlining may be coated on both sides and all subsequent pieces be coated on one side only. Similar considerations apply also, of course, to the reinforcing pieces for the neck band.

The reinforcing pieces for the neck band and cape portion of the collar will, in general, be quite separate and will be applied to the interlining to leave a small margin of interlining between them so that the cape portion can be readily folded over against the neck band in the finished collar. In some cases, however, it may be advantageous to form the cape portion and neck band as a single reinforcing piece, especially when the collar is to be subjected to hard wear and heavy soiling, as for example, in industrial clothing.

The present invention will now be described in greater detail by way of example only with reference to the accompanying drawings, in which:

Figure 1 illustrates a first form of reinforced interlining,

Figure 2 illustrates a finished collar incorporating the interlining of Fig. 1,

Figure 3 illustrates the collar of Figure 2 cut away to indicate its construction and

Figure 4 illustrates a second form of reinforced interlining.

Referring to Fig. 1 of the drawings, the reinforced interlining comprises a basic interlining 1 slightly larger in size than the finished collar. The lower surface (as seen in Figure 1) of the interlining is provided with a coating of a thermosoftening resin. The upper surface 2 of the interlining 1 is bonded to reinforcing pieces 3 and 4 having

the shape of th cape portion and part of the neck band respectively of the finished collar. The reinforcing pieces are each bonded to the interlining by means of a thermosoftening resin, which also covers their upper surfaces 5 and 6.

In the finished collar 7 shown in Figure 2, the outer fabric 8 is secured to the reinforcing pieces 3 and 4 by the thermosoftening resin. The collar 7 is provided with a row of stitching 9 around three edges, the stitching along each side edge also serving to hold thin strips 10 of, for example, Mylar or Melinex in position.

Figure 3 illustrates the construction of the collar 7, from the interlining 1, reinforcing pieces 3 and 4 and the outer fabric 8. A narrow, for example, 1 cm margin 11 of interlining 1 between the reinforcing pieces 3 and 4 is provided so that the finished collar can be easily folded once it has been attached to a shirt.

Referring now to Fig. 4 of the drawings, the reinforced interlining comprises a basic interlining 1 and reinforcing pieces 3 and 4 bonded thereto. The reinforced interlining is similar to that shown in Fig. 1 with the exception that there is no margin of basic interlining around the edges of the reinforcing piece 3 and that the reinforcing pieces 3 and 4 are joined at their outer ends 15. A small piece of reinforcing material 12, consisting of a fabric which is the same as or similar to the reinforcing piece 3 and having a thin strip 14 of, for example, Mylar or Melinex stitched at 13 adjacent one edge, is bonded to the reinforcing piece 3.

WHAT WE CLAIM IS:

1. A reinforced interlining for a shirt collar, which comprises an interlining having one of its surfaces coated or impregnated with a thermosoftening resin and having bonded to its other surface one or more reinforcing pieces so shaped as to occupy the cape portion and at least a part of the neck band of a collar

2. An interlining as claimed in claim 1, wherein the surface of the or each reinforcing piece remote from the interlining is coated or impregnated with a thermosoftening resin.

3. An interlining as claimed in claim 1 or claim 2, wherein the or each reinforcing piece is bonded to the interlining by a thermosoftening resin.

4. An interlining as claimed in any one of claims 1 to 3, wherein the coating or impregnation of thermosoftening resin on the interlining and/or the or each reinforcing piece comprises a plurality of small closely spaced dots of thermosoftening resin.

5. An interlining as claimed in any one of claims 1 to 4, wherein the or each reinforcing piece comprises a plurality of superposed pieces of reinforcing material.

6. A reinforced interlining for a shirt collar, substantially as described herein.

7. A reinforced interlining for a shirt collar, substantially as described herein with reference to and as shown in Figs. 1, 2 and 3, or Fig. 4 of the accompanying drawings.

8. A method of making a reinforced interlining for a shirt collar wherein one or more reinforcing pieces so shaped as to occupy the cape portion and at least a part of the neck band of a collar are bonded to one surface of an interlining the other surface of which is provided with a coating or impregnation of a thermosoftening resin.

9. A method as claimed in claim 8, wherein the surface of the or each reinforcing piece remote from the interlining is coated or impregnated with a thermosoftening resin.

10. A method as claimed in claim 8 or claim 9, wherein the or each reinforcing piece is positioned with a thermosoftening resin coated or impregnated surface adjacent the uncoated surface of the interlining, and the whole is heated to soften the thermosoftening resin to bond the or each reinforcing piece to the interlining, and then cooled.

11. A method as claimed in claim 10, wherein the reinforcing piece(s) and interlining are heated under pressure.

12. A method as claimed in claim 10 or claim 11, wherein, prior to heating, the or each reinforcing piece is secured to the interlining by spot welding.

13. A method as claimed in any one of claims 8 to 12, wherein one or more further reinforcing pieces are subsequently bonded to the or each reinforcing piece of the reinforced interlining.

14. A method of making a reinforced interlining for a shirt collar substantially as described herein.

15. A reinforced interlining for a shirt collar made by a method as claimed in any one of claims 8 to 14.

16. A shirt collar including a reinforced interlining, substantially as described herein.

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1 SHEET This drawing is a reproduction of the Original on a reduced scale

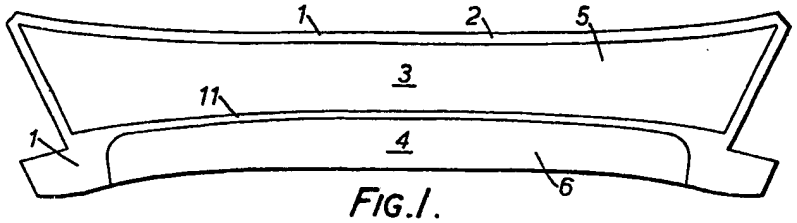

FIG.1.

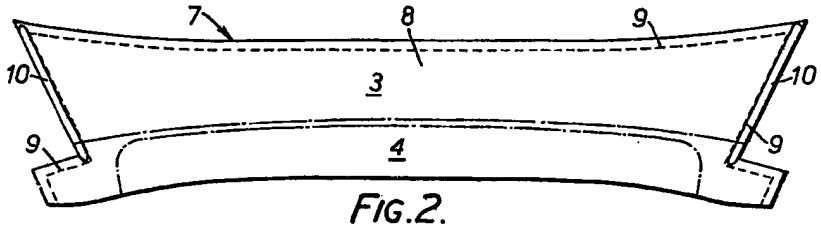

FIG.2.

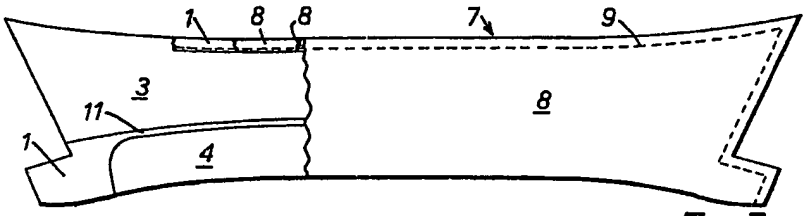

FIG.3.

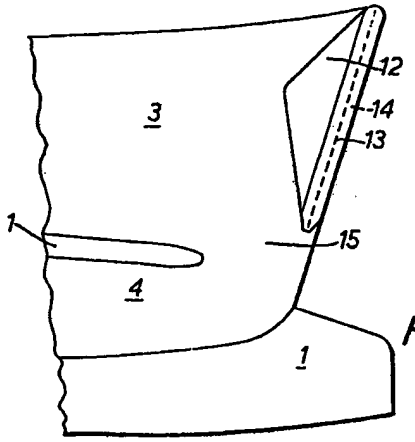

FIG.4.